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Parallax Notes

a. N. G. C. 4051. The spiral nebula N. G. C. 4051 is described by Curtis as "a fine, rather bright spiral 4′ x 2′. Very bright stellar nucleus. There are numerous almost stellar condensations. It is a two-branched spiral, and each branch is bifid." On the fifteen-minutes exposures taken at the 80-foot focus of the 60-inch reflector, the central part only is visible and in appearance its images are hardly different from the surrounding stars. From sixteen exposures I find a relative parallax of +0″.001 ±0″.005. From a discussion of the systematic errors of all directly determined parallaxes, we have recently derived the conclusion that the Mount Wilson parallaxes are 0″.002 too large, and since the reduction from relative to absolute parallax is +0″.002, we may use the relative Mount Wilson parallaxes as the final absolute values.

TABLE I

N. G. C.	π	p.e.
224	+0″.004	±0″.005
4051	+0 .001	±0 .005
5194	+0 .005	±0 .008

For three spirals, parallaxes have now been determined at this Observatory. The results are collected in Table I. From this we can only draw the conclusion that the parallaxes of these objects are too small to be derived by the parallax methods now in vogue.

b. BD +30° 3639. This is Campbell's hydrogen-envelope star. From sixteen exposures we have derived a parallax of +0″.005 ±0″.009. The nebulosity, however, is not quite symmetrical with respect to the central star, and plates not taken with very good seeing may vitiate the measures. The series of plates will therefore be increased until we have a set of extremely good plates and the present result must be taken as preliminary.

c. From twelve exposures of the beautiful planetary *N. G. C. 6543*, a preliminary parallax of +0″.041 ±0″.006 was derived.

Including BD +30° 3639, which resembles a planetary more than it does a typical Wolf-Rayet star, we have now finished the parallaxes of ten planetaries. The results are collected in Table II.

TABLE II

N.G.C.	π	p.e.	m
40	0″.000	±0″.003	11.6
2022	+0 .008	0 .004	14.2
2392	+0 .020	0 .003	10.0
6543	+0 .041	0 .006	11.3
6720	+0 .008	0 .005	14.7
6804	+0 .020	0 .003	13.4
6905	+0 .013	0 .002	14.5
7008	+0 .014	0 .004	12.8
7662	+0 .021	0 .004	12.9
BD+30° 3639	+0 .005	±0 .009	10.4

To derive a homogeneous system for the photographic magnitudes of the central stars, counts were made of the number of stars of equal and brighter magnitudes in as large an area as the plates would allow. Then with the help of Table IV of *Publications of the Astronomical Laboratory at Groningen*, No. 27, the apparent photographic magnitudes m were derived. Using the formula

$$\overline{M}=5\log\overline{\pi}+5-5\log\overline{10^{-0.2m}},$$

which is based on the supposition of equal absolute magnitude, we find for the mean absolute magnitude of these ten central stars

$$\overline{M}=+8.5$$

d. From fourteen exposures a parallax of +0″.023 ±0″.006 was derived for W *Ursae Majoris*. For the same star Shapley derives +0″.020, while the Yerkes Observatory has published a value which (corrected for systematic error) is +0″.017 ±0″.010. The absolute parallax of this eclipsing variable may therefore be taken as +0″.020, which gives an absolute magnitude of +4.4 at maximum and +5.1 at minimum.

e. A Star of large proper motion near W Ursae Majoris. 10′.5 west and 2′.5 north of W *Ursae Majoris* a star was found with considerable proper motion. Its provisional photographic magnitude as derived by Mr. Seares is 14, while its color class is about *k*. The proper motion and parallax were derived, using the same comparison stars as for W *Ursae Majoris*. As these are all east of the star, the determination is only preliminary. On our plates, however, no stars are found west of the object in question. The results are

$$\mu=0''.924, \text{ in } p=238^\circ.4$$
$$\pi=+0''.030\pm0''.031$$

The star has been placed on the regular parallax program in order to derive a more trustworthy result. The position for 1900 is

$$\alpha=9^h35^m27^s$$
$$\delta=+56^\circ27'$$

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